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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/796,488	03/08/2004	Allen C. Thompson	10040374-1	2330

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AGILENT TECHNOLOGIES, INC.
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EXAMINER	
BOWERS, NATHAN ANDREW	
ART UNIT	**PAPER NUMBER**
1797	

MAIL DATE	DELIVERY MODE
11/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/796,488	THOMPSON, ALLEN C.	
	Examiner	Art Unit	
	Nathan A. Bowers	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication. Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 September 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *092407*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1) Claims 1, 2, 5, 9, 12, 14 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by McGrath (US 5192503).

With respect to claims 1, 14 and 18, McGrath discloses an array hybridization apparatus comprising:

(a) a slide (Figure 8:50) for holding an array

(b) a substrate backing (Figure 8:12) being positioned opposite the slide

(c) a gasket (Figure 1:22) interposed between the slide and substrate

(d) a spacer (Figure 1:24) interposed between the slide and the substrate adjacent to the gaseket. This is disclosed in column 5, line 35 to column 6, line 43. Column 10, line 61 to column 11, line 3 states that pressure, through clamping means, is imparted upon the standoff to produce a sealed assay chamber. Both the standoff and the gasket are constructed from flexible materials that are compressed. Although not expressly described by McGrath, if a force were applied to the tabs of the substrate backing and the slide, a portion of the slide would inherently separate from the substrate backing.

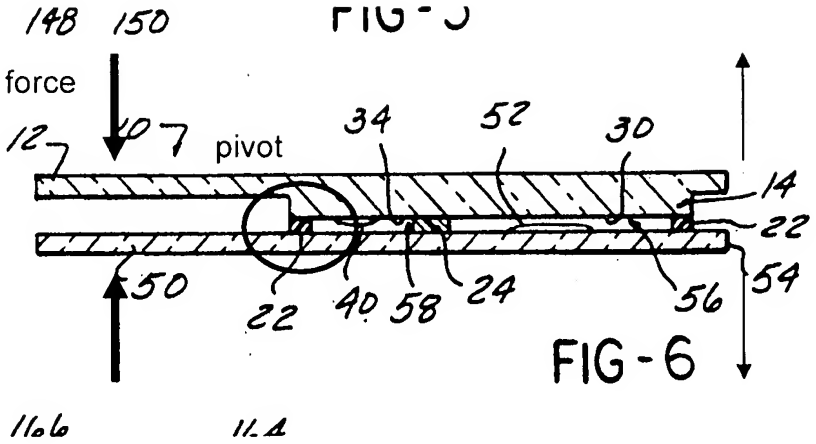

FIG-6

Also, if forces were applied to the slide and substrate in the opposite direction, the slide would clearly separate from the substrate backing as well. This force would be applied from the middle of the slide and/or substrate, or from the edge of the slide and/or substrate.

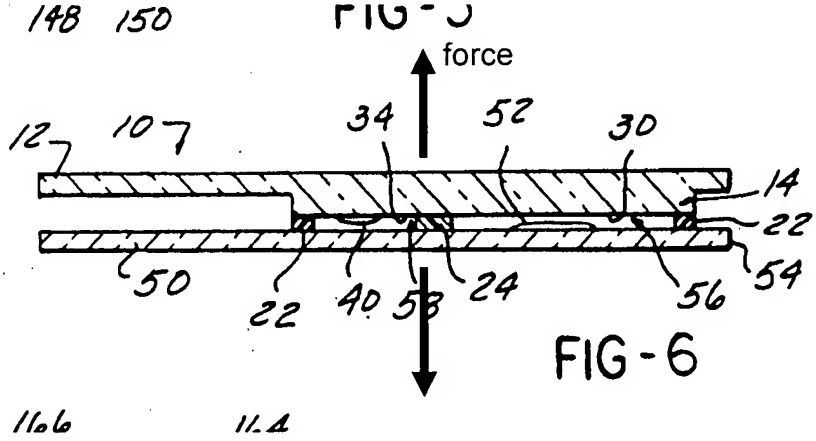

FIG-6

With respect to claim 2, McGrath discloses the apparatus in claim 1 wherein the gasket comprises a deformable material. This is described in column 5, line 60 to column 6, line 3.

With respect to claims 5 and 9, McGrath discloses the apparatus in claim 1 wherein the spacer and the gasket are both attached to the substrate backing (12). This is apparent from the Figures 1 and 2.

With respect to claim 12, McGrath discloses the apparatus in claim 1 wherein the spacer is between 25 to 500 microns in height. In column 5, line 60 to column 6, line 3, McGrath teaches that the spacer is approximately 400 microns in height.

2) Claims 1, 2, 5, 6, 9 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Halverson (US 6913931).

With respect to claims 1 and 14, Halverson discloses an array hybridization apparatus (Figure 10 and 11) comprising:

(a) a slide (Figure 11:470) for holding an array (Figure 11:410)

(b) a substrate backing (Figure 11:482) opposite the slide

(c) a gasket (Figure 11:480) interposed between the slide and substrate

(d) a spacer (Figure 11:490) adjacent to the gasket and interposed between the slide and substrate. This is disclosed in column 12, lines 40-55. It is apparent from Figure 11 that the height of the standoff is greater than the height of the gasket and that a space between the gasket and first substrate is maintained. Although not expressly described by Halverson, if a force were applied to the substrate backing and the slide, a portion of the slide would inherently separate from the substrate backing.

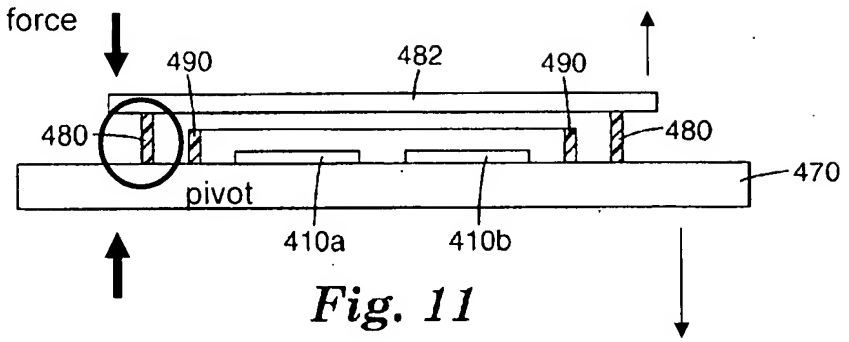

Fig. 11

or

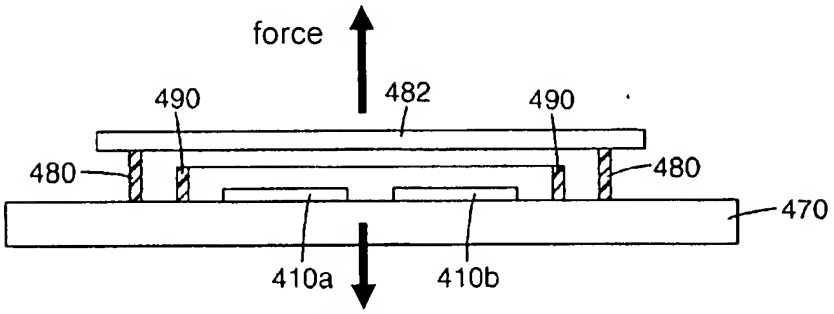

Fig. 11

With respect to claim 2, Halverson discloses that the gasket comprises a deformable material. Gaskets are well known in the art to be made of deformable materials.

With respect to claims 5, 6 and 9, Halverson discloses the apparatus in claim 1 gasket is attached to the substrate backing. Column 12, lines 51-55 specifically state that the gasket may be formed as part of the substrate, or may be constructed as a separate article.

3) Claims 1-3, 8, 11, 14 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Lyman (US 6555361).

With respect to claims 1, 14 and 18, Lyman discloses an array hybridization apparatus comprising:

(a) a slide (Figure 1:14) for holding an array

(b) a substrate backing (Figure 1:14) positioned opposite the slide

(c) a gasket interposed between the slide and the substrate backing

(d) a spacer interposed between the slide and the substrate backing adjacent to the gasket

The two raised rings (Figure 2:26 and 28) are formed on the slide and act as spacers. A gasket (not shown) positioned inside the groove (Figure 3:30) formed by the rings is additionally used to help seal the array reaction chamber. This is disclosed in column 2, line 66 to column 4, line 10. Forces are applied to tabs (Figure 1:16, 18, 20, 22) positioned on the substrate backing and the slide to separate the slide from the substrate backing.

With respect to claim 2, Lyman discloses the apparatus in claim 1 wherein the gasket is a deformable material. Rubber o-ring gaskets are known in the art to be flexible and deformable in nature.

With respect to claims 3, 8 and 11, Lyman discloses the apparatus in claim 1 wherein the spacer comprises a substantially non-deformable material. The spacers are formed as extensions of the slide, and the slide is formed from a rigid plastic.

4) Claims 1-3, 8, 11 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by McGarry (US 6642046).

With respect to claims 1, 2, 9 and 14, McGarry discloses an array hybridization apparatus comprising:

(a) a slide (Figure 2:20) for holding an array (Figure 6:24)

(b) a substrate (Figure 2:32) opposite said slide for acting as a backing for said array hybridization apparatus.

(c) a gasket (Figure 2:48) interposed between said slide and said substrate

(c) a spacer interposed between said slide and said substrate and adjacent to the gasket. The spacer feature consists of the raised portion of the substrate that provides a solid boundary for the slide to contact once it has compacted the gasket downward. This is clearly illustrated in Figure 10. Column 7, lines 14-37 and column 8, lines 9-22 teach that the o-ring gasket is deformable and capable of being depressed by the slide, so that the slide contacts the raised, ridge-like portions of the substrate that act as spacers. After the pressure clamps are removed from the slide and substrate, the slide and substrate are separated through the application of appropriate forces.

With respect to claims 3 and 11, McGarry discloses the apparatus in claim 1 wherein the substrate, and therefore the spacer, comprises a substantially non-deformable material made from metal. This is disclosed in column 6, lines 30-48.

With respect to claim 13, McGarry discloses the apparatus in claim 11 wherein the spacer is between 25 to 1,000 microns in height. In column 7, lines 1-13 of McGarry, it is taught that the reaction chamber has a height between 25 and 150 microns. Since the height of the spacer, according to Figure 10, can be no longer than the height of the reaction chamber, the length of the spacer must exist within these dimensions, as well.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5) Claims 4, 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Halverson (US 6913931) or McGrath (US 5192503) each as applied to claim 1, and further in view of Merchant (US 6090687).

Halverson and McGrath each disclose the apparatus set forth in claim 1 as set forth in the 35 U.S.C. 102 rejections above, however do not expressly disclose that the gasket and spacer are attached to both the slide and the substrate backing.

Merchant discloses a method for joining and sealing two substrates. A first substrate (Figure 1:25) and a second substrate (Figure 1:32) are provided, as well as multiple standoffs (Figure 1:42) that are positioned between the substrates. Column 3, lines 48-62 indicate that the standoffs are attached to both the first and the second substrates. Column 4, lines 17-43 further teach that a sealing gasket (Figure 1:62) is used to form a chamber (Figure 1:63) between the substrates.

Halverson, McGrath and Merchant are analogous art because they are from the same field of endeavor regarding the use of standoffs and gaskets to form a chamber between two parallel substrates.

At the time of the invention, it would have been obvious to attach either the gaskets or the spacers disclosed by Halverson or McGrath to both the slide and the substrate. The motivation for doing so would have been the increased protection from outside influences that is intrinsic in the proposed design. Halverson teaches in column 12, lines 49-51 that standoffs and gaskets are known in the art to protect array chambers from leakage, and also to provide protection from contamination and other undesirable environmental conditions. If the spacers were connected to both of the substrates, a more complete, reliable and thorough seal would be formed.

6) Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Halverson (US 6913931) or McGrath (US 5192503) each as applied to claim 1, and further in view of Bargoot (US 6750039).

Halverson and McGrath each disclose the apparatus set forth in claim 1 as set forth in the 35 U.S.C. 102 rejections above, however do not expressly indicate that the slide and substrate are moved relative to one another using a living hinge.

Bargoot discloses an analytical device comprising a slide that is positioned within a holder comprising a first member (Figure 3:10) and a second member (Figure 3:11). Forces applied to the first and second members are used to separate the two structures from each other. In column 7, line 51 to column 8, line 17, Bargoot indicates that a living hinge is used to open and close the apparatus.

Halverson, McGrath and Bargoot are analogous art because they are from the same field of endeavor regarding biochemical analytical devices.

At the time of the invention, it would have been obvious to connect the slides and substrates of Halverson and McGrath using a living hinge. As evidenced by Bargoot, living hinges are well established in the art as effective means capable of moving a backing substrate relative to a slide containing a sample solution. Living hinges are known to durable, inexpensive, and easy to use.

7) Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Halverson (US 6913931) or McGrath (US 5192503) each as applied to claim 1, and further in view of Stapleton (US 5436129).

Halverson and McGrath each disclose the apparatus set forth in claim 1 as set forth in the 35 U.S.C. 102 rejections above, however do not expressly indicate that the apparatus includes a lever rotatably mounted on a hinge.

Stapleton discloses an analytical device comprising a slide (Figure 1:16) for holding a biological sample, and a substrate backing (Figure 1:14) positioned opposite the slide. Forces applied to the substrate backing and slide are used to separate the two structures from each other. In column 11, line 29 to column 12, line 19 and column 16, lines 33-49, Stapleton indicates that the slide is separated from the substrate using a lever (Figure 1:24) rotatably mounted on a hinge (Figure 1:18).

Halverson, McGrath and Stapleton are analogous art because they are from the same field of endeavor regarding biochemical analytical devices.

At the time of the invention, it would have been obvious to utilize a lever and a hinge arrangement in either of the apparatuses described by Halverson and McGrath as a mechanism to separate the slide from the substrate. Stapleton teaches that levers and hinges are known in the art, and are useful because they operate in a quick and effective manner. The levers arrangement of Stapleton is especially beneficial because it can operated manually, or can be acted upon by an automated actuator.

8) Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Halverson (US 6913931) or McGrath (US 5192503) each as applied to claim 1.

Halverson and McGrath each disclose the apparatus set forth in claim 1 as set forth in the 35 U.S.C. 102 rejections above. Although Halverson and McGrath do not clearly disclose the distance that separates the spacer and gasket, it would have been obvious to ensure that the distance was between 1 and 5 cm if it was determined that this length produced optimum results. The distance of separation between spacer and gasket is considered to be a result effective

variable that is optimized through routine experimentation. If a gap of 1-5 cm is found to produce an optimum relationship between the elements of the hybridization arrays, then it would have been apparent to implement this arrangement in future experiments.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-14 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-15 of copending Application No. 10/797764. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant application is anticipated by the copending application. The copending application includes a slide, a substrate, a gasket, and a standoff. Both applications

claim the same structural dimensions and limitations regarding how the spacers and gaskets are connected to the slide and substrate.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1-14 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 4-14 and 16-20 of copending Application No. 10/424175. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant application is anticipated by the copending application. The copending application includes a slide, a substrate, a gasket, and a spacer. Both applications claim the same structural dimensions and limitations regarding how the spacers and gaskets are connected to the slide and substrate.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1-14 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3, 7 and 10-15 of copending Application No. 10/283450. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant application is anticipated by the copending application. The copending application includes a slide, a substrate, a gasket, and a spacer. Both applications claim the same structural dimensions and limitations regarding how the spacers and gaskets are connected to the slide and substrate.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Arguments

Applicant's arguments filed 24 September 2007 with respect to the 35 U.S.C. 102 rejections involving McGrath, Halverson and McGarry have been fully considered but they are not persuasive.

Applicant's principle arguments are

(a) Applicant states that each reference only discloses the use of multiple gaskets, and do not disclose the use of a gasket and a spacer. Spacers are used to limit compression of the gasket and are made from different materials.

In response to Applicant's arguments, please consider the following comments.

The term "spacer" alone does not carry a clear definition in the art, especially since "spacers" are known to be both compressible and incompressible. Although exemplary spacer and gasket materials are suggested in paragraphs [0035] and [0036], Applicant's specification does not include any clear definition of what constitutes a "spacer" or a "gasket." The claims in no way require that the "spacer" is non deformable or non compressible.

Applicant's arguments filed 24 September 2007 with respect to the 35 U.S.C. 102 rejections involving Lyman have been fully considered but they are not persuasive.

Applicant's principle arguments are

(a) Because the spacers and gasket of Lyman surround the entire apparatus at its edge, applying a force would not result in a cantilever effect, and would only result in application of pressure to a portion of the apparatus.

In response to Applicant's arguments, please consider the following comments.

The claims do not require that the applied forces are directed toward the apparatus to promote separation of the slide and substrate backing through a pivoting mechanism. In Lyman, forces are applied to the slide and substrate backing in opposite directions such that the slide is pulled away from the substrate backing. This interpretation of the claim language is depicted in the rejection above.

Applicant's arguments filed 24 September 2007 with respect to the 35 U.S.C. 103 rejections involving Merchant have been fully considered but they are not persuasive.

Applicant's principle arguments are

(a) The proposed combination of either McGrath or Halverson with Merchant would result in a device designed not to be disassembled and having gaskets that are permanently sealed under vacuum. This would destroy the functionality of the McGrath and Halverson devices.

In response to Applicant's arguments, please consider the following comments.

The Merchant reference is applied merely as evidence that it is known to attach gaskets and spacers to either a slide or a substrate backing in micro-machined devices. In altering the McGrath and Halverson references, one would be motivated to vary the positions of the gaskets and slides during the construction of the array hybridization apparatus. This is a simple

rearrangement of parts. In no way is it suggested that one would have been motivated to alter the construction of McGrath and Halverson to create a device permanently sealed under vacuum.

Applicant's arguments filed 24 September 2007 with respect to the 35 U.S.C. 103 rejection involving Teshima have been fully considered and are persuasive. Therefore, this rejection has been withdrawn. However, upon further consideration, a new ground of rejection is made in view of either Halverson or McGrath in view of Bargoot.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan A. Bowers whose telephone number is (571) 272-8613. The examiner can normally be reached on Monday-Friday 8 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gladys Corcoran can be reached on (571) 272-1214. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NAB

GLADYS JP CORCORAN
SUPERVISORY PATENT EXAMINER